

IN THE SPECIFICATION:

The paragraph beginning at page 5, line 1, has been amended as follows:

--Further according to the first aspect of the invention, the low frequency shelving and notch filter may be a second order filter with a z-domain transfer function given by

$$H_c(z) = \sigma_c \frac{1 + b_{1,c}z^{-1} + b_{2,c}z^{-2}}{1 + a_{1,t}z^{-1} + a_{2,t}z^{-2}},$$

wherein  $\sigma_c$  is a characteristic sensitivity of the low frequency shelving and notch filter,  $b_{1,c}$  and  $b_{2,c}$  are feedforward coefficients defining target zero locations, and  $a_{1,t}$  and  $a_{2,t}$  are feedback coefficients defining target pole locations. Further, said parameter signal may include said characteristic sensitivity  $\sigma_c$  and said feedback coefficients  $a_{1,t}$  and  $a_{2,t}$ .--

The paragraph beginning at page 6, line 26, has been amended as follows:

--According further to the third aspect of the invention, the parameter calculator block may comprise: a peak detector, responsive to the displacement prediction signal, for providing a peak displacement prediction signal; a shelving frequency calculator, responsive to the peak displacement prediction signal; for providing a shelving frequency signal; and a sensitivity and coefficient calculator, responsive to said shelving frequency signal, for providing the parameter signal. Further still, said low frequency shelving and notch filter may be a second order digital filter with a z-domain transfer function given by

$$H_c(z) = \sigma_c \frac{1 + b_{1,c}z^{-1} + b_{2,c}z^{-2}}{1 + a_{1,t}z^{-1} + a_{2,t}z^{-2}},$$

wherein  $\sigma_c$  is a characteristic sensitivity of the low frequency shelving and notch filter,  $b_{1,c}$  and  $b_{2,c}$  are feedforward coefficients defining target zero locations, and  $a_{1,t}$  and  $a_{2,t}$  are feedback coefficients defining target pole locations. Yet further, said parameter signal may include said characteristic sensitivity  $\sigma_c$  and said feedback coefficients  $a_{1,t}$  and  $a_{2,t}$ .--

The paragraph beginning at page 11, line 20, has been amended as follows:

-- Inexpensive loudspeakers often have an under-damped response, i.e., having values of  $Q_c$  and  $Q_t$  greater than  $1/\sqrt{2}$ . Figure 4b shows an example of displacement response curves for the loudspeaker **20** which is under-damped, by utilizing the LFSN filter **11** of Figure 3, according to the present invention. The higher  $Q_c$  and  $Q_t$  values of the loudspeaker **20** make the relationship between the reduction in the displacement response and the increase in  $\omega_t$  less straightforward, particularly near the resonance frequency  $\omega_c$ . To solve this problem, the value of  $Q_c$  may be "artificially" decreased. This is done by setting the value of  $Q_c$  in Equation 1 to the value of  $Q_c \approx 6.4$  (instead of  $1/\sqrt{2}$ ). Figure 5a shows an example among others of response curves of the low-frequency shelving and notch filter **11** (with a notch at  $\omega_c$  by setting  $Q_c=6.4$ ) for an under-damped loudspeaker **20**, according to the present invention. As can be seen from Figure 5a, the resulting response has a notch at the resonance frequency  $\omega_c$ , which comes from setting the numerator  $Q$ -factor in Equation 1 to a value higher than  $1/\sqrt{2}$ . For this reason, the filter **11** is referred to as the low frequency shelving and notch (LFSN) filter.--

The paragraph beginning at page 16, line 16, has been amended as follows:

-- Combining Equations ~~44~~ 10 and ~~42~~ 11 results in

$$\omega_{r,z} = \frac{2\pi}{F_s} f_t \sqrt{x_{lmg}} \sqrt{x_{pn}[n]} \quad (12).--$$

The paragraph beginning at page 18, line 23, has been amended as follows:

-- The flow chart of Figure ~~3~~ 6 only represents one possible scenario among many others. In a method according to the present invention, in a first step **30**, the input electro-acoustical signal **22** is received by the signal processor **10a** and provided to the LFSN filter **11** of said signal processor **10** and to the displacement predictor block **14a** of said signal processor **10**. In a next step **32**, the displacement predictor block **14a** generates the displacement prediction signal **26a** and provides said signal **26a** to the peak detector **16a-1** of

the parameter calculator **16a** of said signal processor **10**. In a next step **34**, the peak displacement prediction signal **23** is generated by the peak detector **16a-1** and provided to the shelving frequency calculator **16a-2** of said parameter calculator **16a**. In a next step **36**, the shelving frequency signal **23** is generated by the shelving frequency calculator **16a-2** and provided to the sensitivity and coefficient calculator **16a-3** of the parameter calculator **16a**. In a next step **38**, the parameter signal **28a** (e.g., which includes the characteristic sensitivity and polynomial coefficients) is generated by the sensitivity and coefficient calculator **16a-3** and provided it to the LFSN filter **11**. In a next step **40**, the output signal **24a** is generated by the LFSN filter **11**. Finally, in a last step **42**, the output signal **24a** is provided to the power amplifier **18** and further to the loudspeaker **20**. --